

**COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Southwest Regional Office**

STATEMENT OF LEGAL AND FACTUAL BASIS

Consolidated Glass & Mirror Corporation
305 Lineberry Road - Galax, Virginia
Permit No. SWRO11015

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Consolidated Glass & Mirror Corporation has applied for a Title V Operating Permit for its Plant No. 1 facility located at 305 Lineberry Road in Galax, Virginia. The Department has reviewed the application and has prepared a Title V Operating Permit.

Engineer/Permit Contact: _____ Date: _____

Air Permit Manager: _____ Date: _____

Deputy Regional Director: _____ Date: _____

FACILITY INFORMATION

Permittee

Consolidated Glass & Mirror Corporation
Plant No. 1
305 Lineberry Road
P.O. Box 389
Galax, VA 24333
NET Facility No. 51-640-00060

SOURCE DESCRIPTION

SIC Code: 3231 – Glass Products, Made of Purchased Glass

Consolidated Glass & Mirror Corporation (CG&M) manufactures mirrors at their Plant No. 1 facility located at 305 Lineberry Road, Galax, Carroll County, Virginia. Large sheets of glass are loaded onto the silver line where they are transformed into mirrors on a continuous conveyor line. The glass sheets are cleaned by automated rotating brushes and tap water. The surface of the glass is lightly etched with cerium oxide and rinsed with deionized water. The cerium oxide roughens the surface of the glass and improves chemical adhesion. A tin sensitizer solution is applied just prior to the silver solution to chemically bond the reflective silver to the glass. A copper solution is then applied to improve the adhesion of the mirror backing paint (applied in a later step) to the reflective coating surface. The mirrors are again rinsed with deionized water and then heated in an electric oven. The mirrors then pass through a continuously flowing curtain of paint at the curtain coater. This backing paint is applied over the reflective metals to protect them from environmental conditions (moisture). The viscosity of the backing paint is constantly monitored and additional solvent is added as needed. The mirror backing paint application process is responsible for the majority of the VOC emissions from the facility.

After exiting the curtain coater, the mirrors are dried in a series of infrared ovens that enclose a section of the conveyor line. The mirrors are allowed to cool slightly before entering the rotogravure, which applies an ultra-violet (UV) coating over the backing paint to protect and improve its durability. UV light is used to cure the coating. The mirrors are then unloaded from the conveyor line and inspected for flaws. The mirrors may then be sent directly to shipping or to any of the various cutting, grinding, beveling, and/or framing operations at the facility.

The facility is a Title V major source of VOC, xylene, ethyl benzene, and total hazardous air pollutant (HAP) emissions. This source is located in an attainment area for all criteria pollutants. The facility is currently permitted under a minor NSR Permit issued on October 23, 2001.

The list of insignificant activities in the Title V application includes several processes that have no emissions associated with them. These operations include: plant wastewater pH control, which utilizes sulfuric acid and caustic soda; ammonia scrubber cleaning with acetic acid; various wet glass cutting and polishing operations (slitters, seam belts, radius corners, drilling, pattern V-groove, master edge, hand cutting, pattern beveling, pattern polisher, hand edging, and felt wheel); glass cleaning and etching with cerium oxide; glass/mirror cutting head coolant pH adjustment with boric acid; wastewater treatment; product packaging (cartoning); and shipping.

COMPLIANCE STATUS

The facility is inspected at least once each year and the last formal inspection was conducted on January 22 and 23, 2001. The source was found to be in compliance with all applicable requirements.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Curtain Coater - The mirrors pass through a continuously flowing curtain of paint, which is applied over the reflective silver surface of the mirror. Thinners are added to the paint to maintain its viscosity at the desired level. Volatile pollutants are emitted from exhausts in the curtain coater room, between the curtain coater and the infrared drying ovens, and inside the infrared drying ovens. Annual emissions from the paint and thinner are limited to 164.60 tons of VOC; 11.75 tons of 2-butoxy ethanol; 0.47 tons of triethylamine; and, 4.70 tons of xylene. There are no add-on pollution control devices on the curtain coater or silver line.

Rotogravure - Applies a UV paint over the mirror backing paint. VOC emissions from the rotogravure paint application are limited to 8.25 tons/year, based on a consumption limit of 75.0 tons/yr of 11% VOC UV paint. The facility normally uses a UV paint with less than 0.1% VOC and resulting annual emissions are less than 0.1 T/yr. There are no VOC control devices on the rotogravure exhaust.

Glass Cutting (Bystronics) - Mineral spirits is sometimes used as a lubricant in the glass cutting operations. For permitting purposes, 100% of the lubricant may potentially be released into the atmosphere as VOC. VOC emissions from glass cutting operations are limited to 5.0 tons/year. There is no exhaust or control device on the glass cutting operations.

Glass Grinding & Beveling - CG&M may use glass grinding coolants that contain up to 10% VOC by weight. A batch of coolant solution is typically comprised of 40,000 gallons of water and 400 gallons of coolant. The coolant solution is pumped to the grinding and beveling machines and circulated back to the storage tank 24 hours/day, 5 days/week. After the coolant solution has been in use for a period of 4 weeks, it is replaced with a new batch. Annual emissions from the glass grinding and beveling operations are limited to 8.0 tons of VOC and 4.0 tons of 2-butoxy ethanol.

EMISSIONS INVENTORY

The 1996 annual emissions are summarized in the following table:

1996 Plant-Wide Criteria Pollutant Emissions	
Pollutant	Tons Emitted
VOC	118.1

EMISSION UNIT APPLICABLE REQUIREMENTS

Curtain Coater (Unit ID No. 1.A)

Limitations:

The following limitations are State BACT requirements from Conditions 3, 4, 9, and 22 of the Minor

NSR Permit issued on October 23, 2001:

- Condition 3, limiting curtain coater mirror back paint consumption to 88.23 pounds per hour and 235.0 tons per year. The maximum VOC content in the approved paints is 44.57% by weight.
- Condition 4, limiting consumption of n-butyl acetate reducer (or equivalent) in the curtain coater mirror back painting operation to 22.47 pounds per hour and 59.86 tons per year.
- Condition 9 limiting annual VOC emissions to 61.79 pounds per hour and 164.60 tons per year.
- Condition 22 limiting the emissions of: 2-butoxy ethanol to 4.41 lbs/hr and 11.75 tons/yr; triethylamine to 0.18 lbs/hr and 0.47 tons/yr; and, xylene to 1.76 lbs/hr and 4.70 tons/yr.

Monitoring & Recordkeeping:

As required in Conditions 13 and 25 of the Minor NSR Permit issued on October 23, 2001, CG&M will monitor and record on a monthly basis, the weight of mirror backing paint and reducer consumed and the VOC throughput. Hourly, monthly and annual pollutant emissions will be calculated and recorded. Hourly emissions will be calculated by dividing monthly emissions by monthly hours of operation.

Testing:

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit, if necessary to determine compliance with an emission limit or standard.

Reporting:

Condition 16 of the Minor NSR Permit issued on October 23, 2001 requires that CG&M notify DEQ within four (4) hours of any malfunction that results in excess emissions for more than one (1) hour. Within 14 days, CG&M shall provide a written statement explaining the problem, the corrective action taken, and estimated duration of the malfunction.

Compliance with the curtain coater emission limits listed in Conditions 9 and 22 of the NSR permit issued October 23, 2001, will be demonstrated through emission calculations. These emission calculations will be based on 100% of the volatile pollutants in the mirror backing paint (as applied) being emitted to the atmosphere. The VOC, 2-butoxy ethanol, triethylamine, and xylene contents of each paint and reducer (per the product MSDS) multiplied by the corresponding quantity of each coating applied, will be used to determine the corresponding monthly emissions of these pollutants from the curtain coater. Hourly emissions will be determined by dividing the monthly emissions by the hours of curtain coater operation.

Streamlined Requirements:

There are no streamlined requirements for the curtain coater mirror back painting operation.

Rotogravure UV Coating Process

Limitations:

The following limitations are State BACT requirements from Conditions 5 and 9 of the Minor NSR Permit issued on October 23, 2001:

- Condition 5, limiting rotogravure coating consumption to 25 pounds per hour and 75 tons per year. The VOC content of equivalent rotogravure coatings is not to exceed 11% by weight.

- Condition 9 limiting annual VOC emissions from the rotogravure coating process to 2.75 pounds per hour and 8.25 tons per year.

Monitoring & Recordkeeping:

As required in Condition 11 of the Minor NSR Permit issued on October 23, 2001, CG&M will monitor and record on a monthly basis, the weight of coatings consumed in the rotogravure and the VOC throughput. Hourly, monthly and annual VOC emissions will be calculated and recorded. Hourly VOC emissions will be calculated by dividing monthly emissions by monthly hours of operation.

Testing:

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit, if necessary to determine compliance with an emission limit or standard.

Reporting:

Condition 16 of the Minor NSR Permit issued on October 23, 2001 requires that CG&M notify DEQ within four (4) hours of any malfunction that results in excess emissions for more than one (1) hour. Within 14 days, CG&M shall provide a written statement explaining the problem, the corrective action taken, and estimated duration of the malfunction.

Compliance with the rotogravure UV coating process VOC emission limits listed in Condition 10 of the NSR permit issued October 23, 2001, will be demonstrated through emission calculations. These emission calculations will be based on 100% of the VOC in the UV coating being emitted to the atmosphere. The VOC content of each coating (per the product MSDS) multiplied by the corresponding quantity of that coating applied will be used to determine the monthly VOC emissions from the rotogravure. Hourly emissions will be determined by dividing the monthly VOC total by the hours of rotogravure operation.

Streamlined Requirements:

There are no streamlined requirements for the rotogravure UV coating application operation.

Glass Cutting Operations

Limitations:

The following limitations are State BACT requirements from Conditions 6 and 11 of the Minor NSR Permit issued on October 23, 2001:

- Condition 6, limiting mineral spirits (or equivalent volatile lubricant) consumption to 32.0 pounds per hour and 5.0 tons per year.
- Condition 11 limiting annual VOC emissions from the glass cutting operations to 32.00 pounds per hour and 5.00 tons per year.

Monitoring & Recordkeeping:

As required in Condition 13 of the Minor NSR Permit issued on October 23, 2001, CG&M will monitor and record on a monthly basis, the consumption of glass cutting lubricant. Hourly consumption will be calculated by dividing monthly consumption by monthly hours of operation.

Testing:

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit, if necessary to determine compliance with an emission limit or standard.

Reporting:

Condition 16 of the Minor NSR Permit issued on October 23, 2001 requires that CG&M notify DEQ within four (4) hours of any malfunction that results in excess emissions for more than one (1) hour. Within 14 days, CG&M shall provide a written statement explaining the problem, the corrective action taken, and estimated duration of the malfunction.

Compliance with the glass cutting lubricant VOC emission limits listed in Condition 11 of the NSR permit issued October 23, 2001, will be demonstrated through emission calculations. These emission calculations will be based on 100% of the VOC in the lubricant (mineral spirits or equivalent) being emitted to the atmosphere. The VOC content of each lubricant (per the product MSDS) multiplied by the corresponding quantity of that lubricant consumed will be used to determine the monthly VOC emissions from glass cutting. Hourly emissions will be determined by dividing the monthly VOC total by the hours of unit operation.

Streamlined Requirements:

There are no streamlined requirements for the glass cutting operations.

Glass Grinding & Beveling Coolant**Limitations:**

The following limitations are State BACT requirements from Conditions 7 and 12 of the Minor NSR Permit issued on October 23, 2001:

- Condition 7, limiting Quaker Microcut 106-C (or equivalent coolant) consumption to 13.9 pounds per hour and 80.0 tons per year.
- Conditions 12 and 23 limiting emissions from the circulation and use of the glass grinding & beveling coolant to 1.39 lbs/hr and 8.00 tons/yr of VOC and, 0.70 lbs/hr and 4.00 tons/yr of 2-butoxy ethanol.

Monitoring & Recordkeeping:

As required in Conditions 13 and 25 of the Minor NSR Permit issued on October 23, 2001, CG&M will monitor and record on a monthly basis, the consumption of glass grinding coolant and the glycol ether emissions from the glass grinding & beveling coolant. Hourly consumption and emissions will be calculated by dividing monthly totals by monthly hours of operation.

Testing:

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit, if necessary to determine compliance with an emission limit or standard.

Reporting:

Condition 16 of the Minor NSR Permit issued on October 23, 2001 requires that CG&M notify DEQ within four (4) hours of any malfunction that results in excess emissions for more than one (1) hour. Within 14 days, CG&M shall provide a written statement explaining the problem, the corrective action taken, and estimated duration of the malfunction.

Compliance with the glass grinding coolant pollutant emission limits listed in Conditions 12 and 23 of the NSR permit issued October 23, 2001, will be demonstrated through emission calculations. These emission calculations will be based on 100% of the volatile pollutants in the coolant being emitted to the atmosphere. The VOC and 2-butoxy ethanol content of each lubricant (per the product MSDS) multiplied by the corresponding quantity of that lubricant consumed, will be used to

determine the corresponding monthly emissions of these pollutants from the glass grinding coolant. Hourly emissions will be determined by dividing the monthly emissions by the hours of unit operation.

Streamlined Requirements:

There are no streamlined requirements for the glass grinding coolant operations.

FACILITY-WIDE REQUIREMENTS

Limitations:

The following limitation is a State BACT requirement from Condition 8 of the Minor NSR Permit issued on October 23, 2001:

- Condition 8, limiting the annual production of mirrors to 31.2 million square feet.

Monitoring & Recordkeeping:

As required in Condition 13 of the Minor NSR Permit issued on October 23, 2001, CG&M will monitor and record on a monthly basis, the annual throughput of mirrors, calculated as the sum of each consecutive twelve (12) month period.

Testing:

The permit does not require facility-wide source testing. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit, if necessary to determine compliance with an emission limit or standard.

Reporting:

Condition 16 of the Minor NSR Permit issued on October 23, 2001 requires that the permittee notify the DEQ Director within four business hours if the permitted facility or related air pollution control equipment causes excess emissions for more than one hour. The owner must provide a written statement within 14 days explaining the problem, corrective actions taken, and the estimated duration of the malfunction.

Streamlined Requirements:

There are no facility-wide streamlined requirements.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

STATE-ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Code have specific requirements only enforceable by the State and have not been included in the Federal Operating Permit (unless included previously in a federally enforceable permit):

- 9 VAC 5-40-340, Standard for odor;
- 9 VAC 5-50-180, Standard for Toxic Pollutants; and
- 9 VAC 5-40-350, Standard for Toxic Pollutants.

FUTURE APPLICABLE REQUIREMENTS

There are no known future applicable requirements for this facility.

INAPPLICABLE REQUIREMENTS

The provisions of 9 VAC 5-40-300 (Standard for Volatile Organic Compounds) and 9 VAC 5-40-310 (Standard for Nitrogen Oxides) are not appropriate since the facility is not located in the Northern Virginia Emissions Control Area.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting will be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
21	Floor Patch	9 VAC 5-80-720 A7	none	20 gal/yr
22, 47	Silver Nitrate Solution (mirror plating process)	9 VAC 5-80-720 B	none	4200 gal/yr
23	Sodium Hydroxide Solution (mirror plating process)	9 VAC 5-80-720 B	none	4200 gal/yr
24	Tin Sensitizer Solution (mirror plating process)	9 VAC 5-80-720 B2	HCl	120 gal/yr
25	Ventilation for Wheel Dressing Machine Room	9 VAC 5-80-720 B	none	-
26	Methyl Ethyl Ketone (UV Cleanup)	9 VAC 5-80-720 B	MEK / VOC	440 gal/yr
27	Sulfuric Acid (pH control for wastewater treatment and mixing copper sulfate solution for silverline)	9 VAC 5-80-720 B	none	2750 gal/yr
28	Muriatic Acid (regeneration of deionizers and cleaning filter cloths in filter press)	9 VAC 5-80-720 B6	HCl (31.5%) (none emitted)	4950 gal/yr
29	Caustic Soda (Wastewater pH)	9 VAC 5-80-720 B	none	7920 gal/yr
30	Acetic Acid (Ammonia Scrubber Cleaning)	9 VAC 5-80-720 B	none	3 gal/yr
31 32 34	<u>Drilling & Shaping:</u> - Slitters - Finger Pull - Seam Belt	9 VAC 5-80-720 B	none	-

Emission Unit No.	Emission Unit Description	Citation	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
35	Vinyl Backing	9 VAC 5-80-720 B	none	720,000 ft/yr
36	Boric Acid (Adjust Coolant Pit pH)	9 VAC 5-80-720 B	none	9000 lbs/yr
37	Defoamer (Coolant Pit and Wastewater Treatment)	9 VAC 5-80-720 B2	VOC	60 gal/yr
38	Soap for Washers	9 VAC 5-80-720 B	none	55 gal/yr
39	Face-Down Stripper (Mirror Cleaning)	9 VAC 5-80-720 B	none	4875 gal/yr
40	Nitric Acid (Silver Line Cleaning)	9 VAC 5-80-720 B	none	300 gal/yr
41	Parts Washer	9 VAC 5-80-720 B2	VOC	250 gal/yr
42	Propane-Fired Space Heaters and Water Heaters	9 VAC 5-80-720 B	VOC, NO _x , CO	91,000 gal/yr
43, 48	Copper Sulfate Pentahydrate (Mirror Plating)	9 VAC 5-80-720 B	none	5800 lbs/yr
44	Sugar Solution (Mirror Plating)	9 VAC 5-80-720 B	none	4200 gal/yr
45	Cerium Oxide (Glass Cleaning/Polishing/Etching)	9 VAC 5-80-720 B	none	20 tons/yr
46	Hydraulic Oil	9 VAC 5-80-720 B	VOC	520 gal/yr

The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are available for public review.

PUBLIC PARTICIPATION

A public notice appeared in The Roanoke Times on December 2, 2001 announcing a 30-day public comment period for this permit. The public comment period extended until January 1, 2002. Notice was also provided to North Carolina, Tennessee, and West Virginia as affected states.